6 Triangles

6.1 MULTIPLE CHOICE QUESTIONS

1. If $\Delta ABC \sim \Delta PQR$, $\angle A = 50°$, $\angle B = 70°$, then $\angle R$ is equal to :

   (a) 50° (b) 60° (c) 100° (d) 70°

2. In ΔLMN and ΔPQR, $\Delta LMN \sim \Delta PQR$ such that $\angle L = 40°$, $\angle R = 60°$ then, $\angle M$ is:

   (a) 80° (b) 100° (c) 40° (d) 60°

3. The ratio of the areas of two similar triangles is equal to :

   (a) ratio of square of their corresponding sides

   (b) ratio of their corresponding atitudes

   (c) ratio of their corresponding angles (d) none of these.

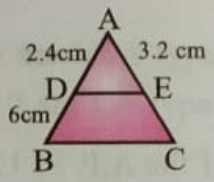
4. The length of the altitude of an equilateral Δ of side a is :

   (a) $\frac{\sqrt{3}}{2a}$ (b) $\frac{2a}{\sqrt{3}}$ (c) $\frac{a}{2\sqrt{3}}$ (d) $\frac{a\sqrt{3}}{2}$

5. In fig. ABC is a triangle and DE||BC, AD = 2.4 cm, DB = 6 cm and AE = 3.2 cm, then AC is equal to :

   (a) 8 cm (b) 6 cm

   (c) 11.2 cm (d) 4 cm



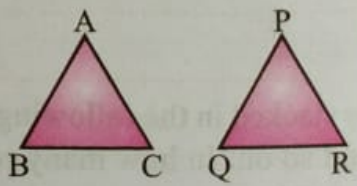
6. $\Delta ABC \sim \Delta PQR$, $ar(\Delta ABC) = 16\ cm^2$ and $ar(\Delta PQR) = 49\ cm^2$, then $\frac{AB}{PQ}$:

   (a) $\frac{16}{49}$ (b) $\frac{4}{7}$ (c) $\frac{2}{5}$ (d) none of these.

7. If $\Delta ABC \sim \Delta PQR$, then $\frac{ar(\Delta ABC)}{ar(\Delta PQR)}$ is equal to :

   (a) $\frac{AB^2}{QR^2} = \frac{BC^2}{PQ^2} = \frac{AC^2}{PR^2}$ (b) $\frac{AB^2}{PQ^2} = \frac{BC^2}{QR^2} = \frac{AC^2}{PR^2}$

   (c) $\frac{AB^2}{PR^2} = \frac{BC^2}{QR^2} = \frac{AC^2}{PQ^2}$ (d) none of these.



8. In ΔPQR, DE || QR, then

   (a) $\frac{PD}{PQ} = \frac{PE}{ER}$ (b) $\frac{PQ}{PQ} = \frac{DE}{QR}$

   (c) $\frac{PD}{DQ} = \frac{PE}{ER}$ (d) none of these

Calculatio

7 Coordinate Geometry

7.1 MULTIPLE CHOICE QUESTIONS

1. The distance of the point p(2, 3) from x – axis is :
   a. 2 b. 3 c. 1 d. 5
2. Point on x–axis has coordinates :
   a. (a, 0) b. (0, a) c. (– a, a) d. (a, – a).
3. If the points (1, x), (5, 2) and (9, 5) are collinear then the value of x is :
   a. $\frac{5}{2}$ b. $\frac{-5}{2}$ c. $3\sqrt{2}$ d. –1
4. The points (–4, 0), (4, 0), (0, 3) are the vertices of a :
   a. right triangle b. Isosceles triangle
   c. equilateral triangle d. scalene triangle.
5. If the distance between the points (4, x) and (1, 0) is 5, then x is equal to :
   a. 0 b. 4 c. –4 d. ±4
6. The distance between the points $(0, a\cos\theta + b\sin\theta)$ and $(a\sin\theta - b\cos\theta, 0)$
   a. $\sqrt{a^2+b^2}$ b. $a^2 + b^2$ c. $a^2 - b^2$ d. a + b
7. The coordinates of origin are :
   a. (0, x) b. (y, 0) c. (0, 0) d. (x, y)
8. The co–ordinates of the mid point of the line segment joining the points A (x_1, y_1) and b (x_2, y_2) are :
   a. $\frac{x_2 - x_1}{2}, \frac{y_2 - y_1}{2}$ b. $\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}$
   c. $\frac{x_1 + y_1}{2}, \frac{x_2 + y_2}{2}$ d. $\frac{x_1 - y_1}{2}, \frac{x_2 - y_2}{2}$
9. The coordinates of a point having abscissa as 5 and ordinate as – 5 are.
   a (–5, 5) b. (0, 5) c. (– 5, 0) d. (5, – 5)
10. If the distance of the point (4, a) from x–axis is half its distance from y–axis then the value of a is.
    a. 4 b. 2 c. 0 d. 1

7.2 VERY SHORT ANSWER TYPE QUESTIONS

LEVEL III

16. Find the vertices of a triangle, the mid-points of whose sides are (3, 1), (5, 6) and (–3, 2).
17. The base BC of an equilateral ΔABC lies on y-axis. The coordinates of point 'C' are (0, –3). If the origin is the mid-point of the base BC, find the coordinates of the points A and B.
18. Find the area of the triangle whose sides are along the lines $x = 2$, $y = 0$ and $4x + 5y = 20$.
19. The coordinates of A, B, C and D are (6, 3), (–3, 5), (4, –2) and (k, $3k$) respectively. If $\frac{\text{area}\,\Delta DBC}{\text{area}\,\Delta ABC} = \frac{1}{2}$, find k.
20. If P(x, y), A(3, 4), B(5, –2) are the vertices of triangle PAB such that PA = PB and area of $\Delta PAB = 10$ sq. units. If $PA = k\sqrt{5}$ units, find k.

HIGHER ORDER THINKING SKILLS (H.O.T.S.)

1. If the coordinates of the mid points of the sides of a triangle are (1, 2), (0, –1) and (2, –1). Find the Coordinates of its vertices.
2. Find the values of K if the points P(K + 1, 2K), Q(3K, 2K + 3) and R (5K–1, 5K) are collinear.
3. Find the ratio in which the line $3x + y - 9 = 0$ divides the line segment joining the points (1, 3) and (2, 7).
4. The three vertices of a parallelogram PQRS are P(3, –4), Q(–1, –3) and R(–6 , 2). Find the coordinates of S and also find the area of PQRS.
5. If G be the centroid of a triangle ABC, prove that
$$AB^2 + BC^2 + CA^2 = 3(GA^2 + GB^2 + GC^2)$$
6. If the points (a, 0) (0, b) and (1, 1) are collinear, show that $\frac{1}{a} + \frac{1}{b} = 1$
7. If $a \neq b \neq c$, prove that the points (a, a^2), (b, b^2), (c, c^2) can never be colinear.
8. If $D\left(-\frac{1}{5}, \frac{5}{2}\right)$, E(7,3) and $F\left(\frac{7}{2}, \frac{7}{2}\right)$ are the mid points of sides of ΔABC, find the area of ΔABC.

PREVIOUS YEARS BOARD QUESTIONS

1. Find the coordinates of a point A, where AB is a diameter of the circle with centre (3, –1) and the point B is (2, 6). **(AI 2019)**
2. The line segment joining the points A(2, 1) and B(5, –8) is trisected at the points P and Q such that P is nearer to A. If P also lies on the line given by $2x - y + k = 0$, find the value of k. **(Delhi 2019)**
3. For what value of p, are the points (2, 1), (p, –1) and (–1, 3) collinear? **(AI 2019)**
4. Find the distance of a point P(x, y) from the origin. **(2018)**
5. Find the ratio in which P(4, m) divides the line segment joining the points A(2, 3) and B(6, –3). Hence find m. **(2018)**